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TENTATIVE SPECIFICATION  
FOR  
SINGLE COAT BITUMINOUS  
SURFACE DRESSING

(First Reprint)



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## TENTATIVE SPECIFICATION FOR SINGLE COAT BITUMINOUS SURFACE DRESSING

### INTRODUCTION

The Tentative Specification as prepared by the Bituminous Pavements Committee (personnel given below) in their meeting held at New Delhi on the 26th March, 1963 was sent to all members of the Council for their comments. The Tentative Specification as adopted by the Bituminous Pavements Committee in their meeting held at Chandigarh in November, 1963 in light of the comments of the members of the Council was approved for publication by the Executive Committee in their meeting held on the 30th September, 1964, and was first published in August, 1965. The present reprint of the same incorporates certain amendments in the light of later decisions of the Council on related specifications.

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The Tentative specification is intended to indicate what is considered to be good practice for construction of single coat bituminous surface dressing and shall apply unless modified by special provisions to take into account unusual conditions.

### 1. DESCRIPTION

The work specified consists of a wearing surface composed of a single application of bituminous material covered with one application of cover material of size as specified below, applied on a previously prepared base or pavement.

## 2. MATERIALS

### 2.1. Bituminous Materials

The bituminous materials shall conform to the requirements as specified and provided for in the proposal and satisfy the related specification, issued by the Indian Standards Institution (vide I.S.I Standards 73-1961, 215-1961, 217-1961 and 454-1961). The grades of binders to be used would depend upon the climatic conditions.

### 2.2. Cover Materials

**2.2.1. General requirements :** The cover material shall consist of crushed stone, crushed slag, crushed gravel (shingle) or other stones, as specified, and shall have clean, strong, durable, and fairly cubical fragments free from disintegrated pieces, salt, alkali, vegetable matter, dust and adherent coatings. In case crushed gravel is not available at reasonable cost, rounded gravel (shingle) may be used.

The aggregate shall preferably be hydrophobic in nature and of low porosity.

**2.2.2. Physical requirements :** The aggregate shall satisfy the requirements given in Table 1.

TABLE 1

Property	Value	Method of test
1. Abrasion value, using Los Angeles machine or Aggregate impact value	Max. 35% Max. 30%	I.S. : 2386 (Part IV) —do—
2. Flakiness index	Max. 25%	I.S. : 2386 (Part I)
3. Stripping value	Max. 25%	I.S. : 6241
4. Water absorption (except in case of slag)	Max. 1%	I.S. : 2386 (Part III)
5. Soundness : Loss with sodium sulphate—5 cycles (in case of slag only)	Max. 12%	I.S. : 2386 (Part V)
6. Unit weight or bulk density (in case of slag only)	Min. 1120 kg per m <sup>3</sup>	I.S. : 2386 (Part III)

Where all these conditions cannot be satisfied, it is left to the Engineer-in-charge to allow reasonable tolerances.

**2.2.3. Size :** The size of chippings to be used shall depend on whether the treatment is for the first coat or for the subsequent or renewal coat and shall be as per the size specified below. For single application of the aggregate, it is desirable to keep the grading of the various sizes as specified in Table 2.

TABLE 2

REQUIREMENTS FOR GRADATION OF AGGREGATES

Sieve designation nominal size of aggregate	Specification
I. For surfacing water-bound macadam—first coat	100 per cent passing through 22.4 mm square mesh sieve and retained on 11.2 mm square mesh sieve.
II. For subsequent or renewal coats 10 mm	100 per cent passing through 13.2 mm square mesh sieve and retained on 6.7 mm square mesh sieve

**NOTE :** It is essential to sieve the aggregates through proper size sieves to ensure the size stipulated in the specifications. The sieve sizes indicated above are as per IS : 460-1962.

## 3. CONSTRUCTION METHODS

### 3.1. Weather and Seasonal Limitations

Preferably, the surface dressing work shall be carried on only when the atmospheric temperature in shade is 16°C or above. No bituminous material shall normally be applied when the surface or the cover material is damp, when the weather is foggy or rainy or during duststorm, except, in case of emulsions, the surface should be slightly damp.

### 3.2. Equipment

All equipment necessary for the proper construction of work shall be on the site of the work in good condition.

### 3.3. Preparation of Road Surface

The underlying course on which surface dressing is to be laid shall be prepared, shaped and conditioned to a uniform grade and section as specified. Any depressions or pot-holes shall be properly made up and thoroughly compacted sufficiently in advance. The defective parts should be clearly cut out and the patches of new material put in, and not put on the existing surface.

Where the existing surface shows signs of "fattening-up", such position should be rectified.

It is important that the surface be dry and thoroughly cleaned immediately before applying the binder. The surface should be swept clean free of caked earth and other foreign matter cleaned first with hard brushes, then with softer brushes and finally blowing off with sacks or gunny bags to remove the fine dust. If the base to be treated consists of stabilised soil or of porous aggregates, a suitable bituminous primer, vide IRC: 16-1965, should be applied uniformly preferably by a mechanical sprayer.

If the base to be covered by the surface treatment is an old bituminous surfacing, it shall be swept clean and free from sand, dirt, dust and other loose, deleterious, foreign matter, by means of mechanical sweepers and blowers, if available, supplemented by hand brooms where necessary or by means of wire brushes, small picks, brass brooms, etc., and shall be dry.

Whenever a prime coat is applied to the surface, no bituminous material shall be applied until the prime coat has thoroughly cured (vide respective IRC: 16-1965). The edges of the surface to be treated shall be defined by rope lines stretched in position.

### 3.4. Application of Bituminous Material

After the surface to be treated has been prepared as specified above, bituminous material shall be sprayed uniformly over the dry surface preferably using mechanical sprayers. The binder shall be applied at a temperature appropriate to the type of binder and equipment used. Table 3 gives approximate rate of application of bituminous materials and aggregates per 10 m<sup>2</sup> of surfacing.

Bituminous material shall be applied to the surface uniformly in quantities specified. Excessive deposits of bituminous material upon the road surface caused by stopping or starting the sprayer, by leakage or otherwise, shall be immediately removed.

### 3.5. Application of Cover Material Process involving single application

Immediately after the application of bituminous material, the cover material in the quantity mentioned in Table 3 shall be spread uniformly by hand or by means of a mechanical gritter so as to cover the surface completely. It is preferable to use mechanical gritters.

The surface shall be broomed with a view to ensure uniform spreading.

### 3.6. Rolling Cover Materials

Immediately after the application of the cover materials as described in section 3.5, the entire surface shall be rolled with a 6 to 8 tonne road roller. The rolling shall begin at the edge and proceed lengthwise, over the area to be rolled lapping not less than one third of the roller tread and proceed towards the centre. When the centre is reached, the rolling shall then start at the opposite side and again proceed towards the centre. In the superelevated portions, the rolling should proceed from the inner to the outer edge. While the rolling is in progress, additional aggregate shall be spread by hand in whatever quantities may be required to fill irregularities and to prevent picking up of the aggregate by the roller. Rolling shall be continued until the particles are firmly embedded in the bituminous materials and present a uniform closed surface. Excessive rolling which results in the crushing of the aggregate particles, shall be avoided.

### 3.7. Finishing

The finished surface shall be uniform and conform to the lines, grades and typical cross sections shown in the specifications. When tested with a template and straight edge, the surface shall show no variation greater than 6 mm over a 3 m length.

### 3.8. Opening to Traffic

When straight run bitumen or road tar is employed as the binder, the finished surface shall be thrown open to traffic on the following day but if in special circumstances, the road is required to be opened to traffic immediately after rolling, speed of the traffic shall be limited to 16 km per hour till the following day.

Where cutback bitumen and emulsion is employed, the finished surface shall be kept closed to the traffic until it has sufficiently cured to hold the cover aggregates in place.

Controlling of traffic shall be done by some suitable device, such as barricading and posting of watchmen, etc.

TABLE 3  
APPROXIMATE RATE OF APPLICATION OF BITUMINOUS MATERIALS AND AGGREGATES

AGGREGATES			BINDER		
No.	Nominal size in <i>mm</i>	Quantity per <i>10 m<sup>2</sup></i>	Straight run bitumen per <i>10 m<sup>2</sup></i>	Road tar per <i>10 m<sup>2</sup></i>	Cutback per <i>10 m<sup>2</sup></i>
		<i>m<sup>3</sup></i>	<i>kg</i>	<i>kg</i>	<i>kg</i>
I. For surfacing water-bound macadam surfaces					
1.	13.2	0.14 to 0.15	17.1 to 19.5	17.1 to 22	19.5 to 22
II. For subsequent or renewal coats					
1.	11.2	0.09 to 0.11	9.8 to 12.2	12.2 to 17.1	9.8 to 12.2
2.	11.2 to 2.6	0.08	—	—	9.8 to 12.2